ILLUSTRATED CATALOGUE AND PRICE LIST OF THE KEYSTONE TRADE MARK DROP FORGE WKS.

OFFICE AND WORKS
CENTRAL & DELAWARE AVES.
CHESTER, PA., U. S. A.
JANUARY, 1910
Telephone Connection

ESTABLISHED 1886

KEYSTONE DROP FORGE WORKS

MANUFACTURERS OF

IRON, STEEL, COPPER and BRONZE

DROP FORGINGS

TRADE  MARK.

OFFICE AND WORKS
CENTRAL AND DELAWARE AVENUES
CHESTER, PA., U. S. A.

MACHINE WRENCHES

Single Head



DROP FORGED from BAR STEEL

The opening forms an angle of 15° with handle, which admits the turning of a hexagon nut completely around in places where the swing of the handle is limited to 30°.

No.	Size of Bolt U. S. Standard Nut	Length	Thickness of Head	Opening of Jaw Unfinished	Opening of Jaw Finished	Price Each Unfinished
0	1/4	4	7/32	7/16	1/2	$.10
0½	5/16	5	1/4	17/32	19/32	.12
1	3/8	6	9/32	5/8	11/16	.14
1½	7/16	7	11/32	23/32	25/32	.17
2	1/2	8	13/32	13/16	7/8	.20
2½	9/16	9	7/16	7/8	31/32	.25
3	5/8	10	15/32	1	1 1/16	.32
4	3/4	12	9/16	1 3/16	1 1/4	.40
5	7/8	14	21/32	1 3/8	1 7/16	.50
6	1	15	3/4	1 9/16	1 5/8	.65

MACHINE WRENCHES

Double Head



DROP FORGED from BAR STEEL

The opening forms an angle of 15° with handle, which admits the turning of a hexagon nut completely around in situations where the swing of the handle is limited to 30°.

No.	Size of Bolt U. S. Standard Nut	Length	Thickness of Head	Opening of Jaws Unfinished	Opening of Jaws Finished	Price Each Unfinished
13	3/16 & 1/4	4 1/2	5/16 & 7/32	5/16 & 7/16	13/32 & 1/2	$.15
14	1/4 & 3/8	6	7/32 & 9/32	7/16 & 5/8	1/2 & 11/16	.20
15	3/8 & 1/2	8	9/32 & 13/32	5/8 & 13/16	11/16 & 7/8	.28
16	1/2 & 5/8	10	13/32 & 15/32	13/16 & 1	7/8 & 1 1/16	.41
17	5/8 & 3/4	12	15/32 & 9/16	1 & 1 3/16	1 1/16 & 1 1/4	.53
18	3/4 & 7/8	14	9/16 & 11/16	1 5/16 & 1 3/8	1 1/4 & 1 7/16	.65
19	7/8 & 1	15	21/32 & 3/4	1 3/8 & 1 5/8	1 7/16 & 1 5/8	.82

SPANNER WRENCHES



DROP FORGED from BAR STEEL

Number	Diameter of Circle to Span	Length and Diameter of Pin Unfinished	Length of Wrench Over all	Price Each Unfinished
1	2	$\frac{7}{32}$ x $\frac{1}{4}$	7½	$.22
2	2½	$\frac{9}{32}$ x $\frac{5}{16}$	8½	.24
3	3	$\frac{11}{32}$ x $\frac{3}{8}$	9½	.28
4	4	$\frac{13}{32}$ x $\frac{7}{16}$	10¼	.36

SPEAR OR STRUCTURAL WRENCH



No.	For U. S. Standard Size Bolt	Opening	Extreme Length	Thickness of Head	Price Each
1	¾	1¼	19	¾	$.65

SWIVELS OR ROPE SOCKETS

Open Arm



DROP FORGED from NORWAY IRON

These Swivels are particularly designed for swiveling our Hoist Hooks (pages 6 and 7) and as they are strong and well proportioned, will answer equally well for other similar work or as Rope Sockets. The arms and body are forged solid, not welded.

No.	Length of Body	Will Bore to Fit	Length of Arms	Diameter of Arms	Price Each
1	1⅝	⅝ to ¼	2¼	½	$.30
2	1⅝	⅞ to 1	3	⅝	.35

KEYSTONE HOOKS

Straight Shank



These hooks are drop forged from Special High Tensile and High Elongation Steel.

Descriptive blue print giving the different sections of the Hooks will be sent on request.

Number	Diameter and Length of Shank	Length and Width Over All	Safe Capacity	Price Each
000	⅜ x 1¼	4 x 2⅛	500 lbs.	$.12
00	½ x 1½	5 x 2¾	750 "	.15
0	⅝ x 1½	6 x 3¼	1,000 "	.21
1	¾ x 1⅝	6⅝ x 3¾	2,000 "	.27
2	⅞ x 2⅜	7½ x 4	3,000 "	.36
3	1 x 3	8⅜ x 4¼	4 000 "	.50
4	1⅛ x 3	9½ x 5½	5,000 "	.70
6	1¼ x 3½	10¾ x 6	6,000 "	.95
8	1⅜ x 4	12 x 7	8,000 "	1.25
10	1½ x 4½	13½ x 7¾	10,000 "	1.65

KEYSTONE HOOKS

Eye Shank



These Hooks are drop forged from Special High Tensile and High Elongation Steel.

Descriptive blue print giving the different sections of the Hooks will be sent on request.

Number	Inside and Outside Diameter	Length and Width Over All	Safe Capacity	Price Each
000	⅜ x 1	3½ x 2⅛	500 lbs.	$.12
00	⅝ x 1¼	4½ x 2⅞	750 "	.15
0	¾ x 1½	5½ x 3⅜	1,000 "	.21
1	1 x 2	6½ x 3⅝	2,000 "	.27
2	1 5/16 x 2 7/16	7¼ x 4¼	3,000 "	.36
3	1 7/8 x 2¾	8 x 4¾	4,000 "	.50
4	1½ x 3	9 x 5½	5,000 "	.70
6	1⅝ x 3¼	10 x 6	6,000 "	.95
8	1¾ x 3⅝	11 x 7	8,000 "	1.25
10	1 13/16 x 3⅞	12½ x 7¾	10,000 "	1.65

EYE BOLTS

Weldless



Forged from the bar, with eye worked from the centre.

Prices given for Special Eye Bolts on receipt of drawings or models and specifications.

Number	Diameter and Length of Shank	Outside and Inside Diameter of Eye	Price Each
0	3/8 x 1	2 1/16 & 1 1/4	$.11
1	1/2 x 1 1/2	2 1/4 " 1 5/16	.14
2	5/8 x 1 3/4	2 9/16 " 1 3/8	.22
3	3/4 x 2	2 13/16 " 1 1/2	.30
4	7/8 x 2 1/2	3 5/16 " 1 11/16	.40
5	1 x 3	3 5/8 " 1 3/4	.55
6	1 1/4 x 3	4 1/2 " 2 1/2	1.10
7	1 1/2 x 3 1/2	5 1/4 " 2 3/4	1.55

SHAFTING COLLARS OR BUSHINGS

Unfinished and Weldless



These collars are drop forged from steel and the hole is made scant to allow for finishing.

Size of Shaft	Size of Hole	Outside Diameter	Width of Face	Price Each
$1\frac{5}{16}$	$\frac{7}{8}$	$1\frac{13}{16}$	$\frac{13}{16}$	$.09
$1\frac{9}{16}$	$1\frac{1}{8}$	$2\frac{1}{16}$	$\frac{7}{8}$	.11
$1\frac{7}{16}$	$1\frac{3}{8}$	$2\frac{7}{16}$	1	.14
$1\frac{11}{16}$	$1\frac{5}{8}$	$2\frac{7}{8}$	$1\frac{1}{8}$	.20
$1\frac{13}{16}$	$1\frac{7}{8}$	$3\frac{1}{16}$	$1\frac{3}{16}$	.26
$2\frac{3}{16}$	$2\frac{1}{8}$	$3\frac{1}{2}$	$1\frac{5}{16}$	.35
$2\frac{7}{16}$	$2\frac{3}{8}$	$3\frac{7}{8}$	$1\frac{3}{8}$	.44
$2\frac{11}{16}$	$2\frac{5}{8}$	$4\frac{1}{16}$	$1\frac{7}{16}$	.56
$2\frac{13}{16}$	$2\frac{7}{8}$	$4\frac{9}{16}$	$1\frac{9}{16}$	.70

MACHINE HANDLE FORGINGS

Ball Pattern



Drop Forged from Bar Steel with smooth black forge finish.

Number	Length and Diameter of Shank	Length Over All	Price Each
0	½ x 11/32	2¼	$.08
1	5/8 x 13/32	2⅝	.10
2	¾ x 15/32	3¼	.13
3	⅞ x 17/32	3⅞	.17
4	1 x 19/32	4½	.22
5	1⅛ x 21/32	5⅛	.27

THUMB-SCREW BLANKS



DROP FORGED from BAR STEEL

Special sizes and shapes to order.

PRICE PER HUNDRED

Length Under Head	Diameter						
	3/16 in	1/4 in.	5/16 in.	3/8 in.	7/16 in	1/2 in.	5/8 in.
1/2	$1.90	$2.15	$2.50	$3.05	$3.80	$4.75	
3/4	2.00	2.25	2.60	3.20	4.00	5.00	
1	2.10	2.35	2.75	3.40	4.25	5.30	$8.00
1 1/4	2.20	2.45	2.90	3.60	4.50	5.60	8.40
1 1/2	2.30	2.55	3.10	3.80	4.75	5.95	8.90
1 3/4	2.40	2.70	3.30	4.05	5.05	6.30	9.40
2	2.50	2.86	3.50	4.30	5.35	6.65	9.95
2 1/4		3.05	3.70	4.60	5.70	7.05	10.50
2 1/2		3.25	3.95	4.90	6 05	7.45	11.05
2 3/4		3.45	4.20	5.20	6.40	7.90	11.65
3		3.70	4.45	5.50	6.75	8.35	12.25
3 1/2			5.00	6.15	7.55	9.25	13.50
4			5.60	6.90	8.45	10.25	14.85
4 1/2				7.70	9.35	11.35	16.35
5				8.50	10.35	12.60	18.00
5 1/2				9.40	11.45	13.90	19.80
6						15.20	21.80

THUMB NUT BLANKS



DROP FORGED from BAR STEEL

Special sizes and shapes to order.

Number	Will Tap For	Price per 100
1	$\frac{5}{16}$ in. Bolt	$2.60
2	$\frac{3}{8}$ " "	3.25
3	$\frac{7}{16}$ " "	4.00
4	$\frac{1}{2}$ " "	5.00
5	$\frac{5}{8}$ " "	7.25

"KEYSTONE" CONNECTING LINK



OPEN



CLOSED

DESCRIPTION

The Keystone Open Link is composed of two similar halves centrally pivoted on same axis, and having on the inner face of each end a lug and a recess which when closed together interlock and by abutting against each other prevent the lateral displacement or rending of the link when subjected to a strain.

FORGED from BAR STEEL

OUT-PULLS and OUT-WEARS Chain of EQUAL SIZE

Taking the place of a weld, shackle, snap hook, or other loose metallic connections.

A chain is only as strong as its weakest link, and if you would not use a Malleable or Cast Iron Chain, why should you use a Malleable or Cast Iron Link in a chain?

PRICE PER DOZEN

	¼″	5/16″	⅜″	7/16″	½″	⅝″	¾″	⅞″	1″	1⅛″	1¼″
Forge Finish	$2.00	$2.25	$2.50	$3.25	$4.00	$7.50	$10.00	$12.50	$15.00	$17.50	$20.00

We have discontinued carrying Galvanized Links in stock. Prices will be quoted upon application.

Sizes up to ½″ packed one dozen in a box when desired.

"KEYSTONE" SAFETY SHACKLE HOOK



CLOSE FITTING



QUICK ACTING

ABSOLUTELY SAFE

Saves Life **Saves Property**

CANNOT BECOME DETACHED OR PULLED OUT

SUITABLE FOR USE WITH

Tackle Blocks, Wire Guys, Ropes or Chains

PRICE LIST

Size	For Blocks	For Wire Rope	Price Each
1 inch	7″ to 9″	⅝″ to ¾″	$3.00
1⅜ "	10″ to 12″	⅞″ to 1⅛″	5.00
1⅝ "	13″ to 15″	1⅛″ to 1⅜″	7.50

NOTE.—1″ size made close fitting; 1⅜″ quick acting and close fitting; 1⅝″ quick acting.

FENCE ORNAMENTS



Carried in Stock. Write for Prices.

Special Styles made to Order.

CANT HOOKS



Made from Special Cant Hook Steel.

Carried in stock.

Write for prices and blue-print giving dimensions.

COAL BREAKER TEETH



Made from Special Grade of Coal Breaker Tooth Steel.

Carried in stock.

Write for prices and blue-print giving dimensions.

SPECIAL DROP FORGINGS

The Drop Forging industry has greatly enlarged within the last few years and Drop Forgings are now used by most manufacturers, some of which we enumerate on page 20.



Drop Forgings are made in two dies. The upper die is fastened to the ram of the drop hammer, which moves between two guides, and is raised and controlled by the hammerman. The lower half of the die is fastened to the anvil or base of the hammer. The metal from which the forgings are made is heated in an oil furnace, and when the proper degree of heat is reached the bar of metal is placed on the bottom die and the metal forced into the impressions of both the upper and lower dies, by a series of blows from the upper die given by the ram of the hammer rising until released.



The dies are designed from blue-prints, drawings or models, and when submitted for the planning of dies we must know whether the blue-print, drawing or model shows the finished or forging size. If the finished size, it is necessary for us to know the allowance desired for machining. In addition to the Drop Forging dies, trimming dies are necessary to remove the fin and surplus metal which is thrown out between the Drop Forging dies. As soon as the dies are completed we submit a lead proof to our customer for approval. This proof may vary from the blue-print, model or drawing on account of the draft. This is the taper that is necessary on the forgings to permit drawing them from the dies while working, and averages about seven degrees. The draft can be obtained by adding to or taking from the forging, and unless instructed to the contrary we add the necessary draft.



As we include but a part of the cost of the dies, trimmers, etc., in our estimates, we cannot sell them at the price noted in our quotations, and the charges made for the said dies, trimmers, etc., do not convey the right to remove them from our factory. This is reasonable when the customer considers that we use our best skill in designing the dies and frequently have ideas of our own which are really our stock in trade. On the other hand, it is not advantageous to our customers to own their dies for, if made by us, in all probability alterations would have to be made before they would fit the hammers and presses in other shops. The dies, however, remain in our possession for the customer's exclusive use, we assuming all expense of breakage and repairs, and we will not make forgings from them for others without the customer's written consent. If the customer owned his dies he would have to take these risks.



As soon as the dies are completed we try them in the hammer for the size of material required for the forging. Frequently we have the proper size of material in stock, as we carry a large stock of material. It is impossible, however, to carry in stock sufficient material for the various requirements on account of the variety of steels used. After the dies are made these delays are overcome on subsequent orders, for we are in position then to order material as soon as the customer's order is received.



During the forging process every possible care is taken to remove the scale, and to insure a complete removal of same we pickle the forgings when so desired. We also have the facilities for tumbling small pieces to remove the scale. We are also equipped to anneal forgings made from High Carbon or Crucible Tool Steel.



In estimating, we would impress upon our customers the fact that it costs as much

to set the dies for a few forgings as for many pieces. Again, the cost of production is also reduced where the orders are for large quantities, as the hammerman gets into a swing and his production is therefore increased. In view of this, therefore, it is well to anticipate the requirements as far ahead as possible when asking for prices or placing orders. The quotations for Special Drop Forgings are made per piece, and not per pound, and vary with the shape of the piece, the material used and the quantity required.



We guarantee the quality of our work and replace without charge forgings that are defective or imperfect, if claim is made within a reasonable time, but cannot be responsible for the cost of labor on the forgings after they have left our hands.

In planning the dies for Drop Forgings it is well to work as close to the finished dimensions as possible, thereby saving considerable time and labor in finishing the pieces. We use the best material obtainable; in many cases special steels are obtained upon analyses specified by our customers, and as the material is heated to a uniform heat, according to the nature of the steel, Drop Forgings are superior to hand forgings or castings because the material is improved by the forging operation. Defects, if any, are on the outside of the forging and not concealed as in castings.

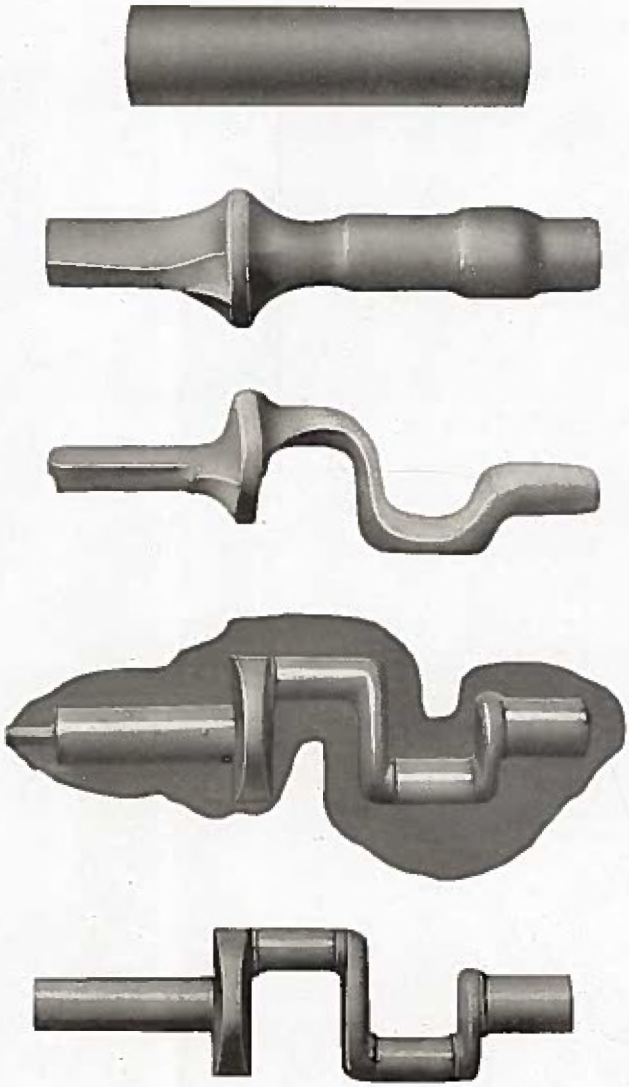


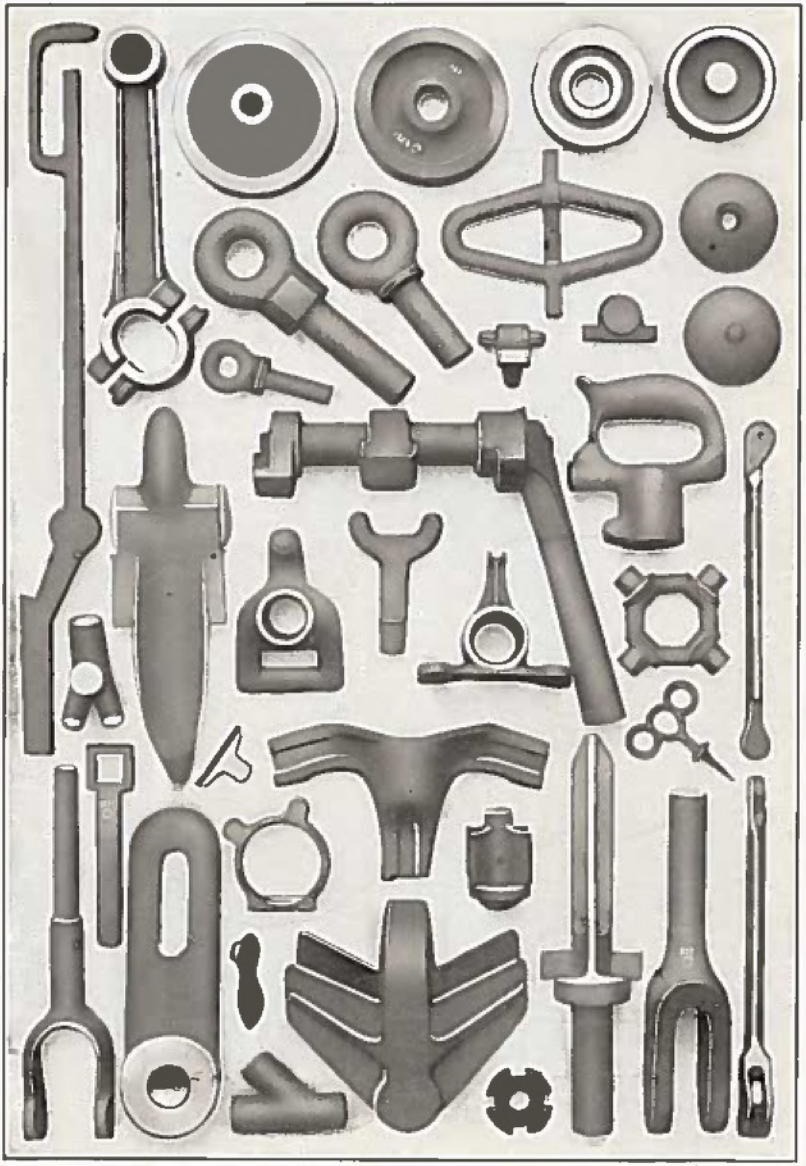
SPECIAL DROP FORGINGS

MADE FOR

Agricultural Machinery
Air Compressors
Auto Cycles
Automobiles
Bicycles
Bookbinders' Machinery
Cement Crushing Machinery
Chain Links and Hooks
Connecting Rods
Conveying Machinery
Crank-shafts
Dairy Machinery
Dentists' Instruments
Drills—Compressed Air and Elec.
Dynamos
Elevators
Engines—Steam, Gas and Hot Air
Gun and Pistol Forgings
Hand Hole Plates and Flanges
Hoisting Machinery
Ice Cutting and Handling Machy.
Injectors
Laundry Machinery
Lawn Mowers
Litter Hinges
Looms
Machine Tools
Machinists' Tools
Meters—Water and Electric
Mining Machinery
Nail Pullers
Picker Teeth
Pipe Cutting and Thread Machy.
Pneumatic Tools
Printers' Tools
Printing Presses
Pumping Machinery
Ratchet Drills
Refrigerating Machinery
Rock Drills
Saw Mill Machinery
Sewing Machines
Shoe Machinery
Snatch Block Hooks
Sugar Machinery
Surgical Instruments
Textile Machinery
Theatrical Stage Appliances
Thresher Teeth
Tobacco Machinery
Trolley Cars
Typewriters
Turbine Engines
Valves
Weighing Machines
Well Bits
Wood Working Machinery,
Wrenches, etc., etc.

Various steps in the manufacture of a Drop Forging.





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STANDARD AND SPECIAL

DROP FORGINGS

MADE BY THE

KEYSTONE DROP FORGE WORKS

CHESTER, PA., U. S. A.